

## Concrete Repair

Westminster Bridge, Ellesmere Port

**Client**

Cheshire West and Chester Council

**Contractor**

Ringway

**Works Commenced**

August 2015

**Works Completed**

September 2015

**Contract Value**

£80,000



Westminster Bridge carries the A5032 Whitby Road over the Ellesmere Port to Frodsham railway line and a local access drive. The three span concrete bridge was built around 1960. The deck is made from steel beams encased in concrete and the support piers and abutments from reinforced concrete.

Each pier comprised of seven columns and a crosshead beam. Both piers needed work, with the north pier in particularly poor condition, suffering from de-lamination, spalling, corroding reinforcement, cracking and surface staining. While these major concrete repairs were carried out underneath, two-way traffic was maintained on the bridge with lanes reduced in width. Footways for pedestrians also remained open.

The severely corroded north pier was on the boundary with the railway, so the work was split into two distinct types. The side facing the access drive was High Street environment and could be done during normal working hours. The side facing the railway required 'rules of the route' rail possessions and was done over ten Saturday night/Sunday morning possessions.

Preparation: The areas to be removed were agreed by visual survey and hammer-tap testing in conjunction with the council's engineer. Prior to breaking out concrete with hand held breakers, the edges of the break-out area were pre-cut by saw. Concrete was removed back to 30mm behind the reinforcement. All surfaces of steel reinforcement were mechanically abraded to remove corrosion.

The concrete repair works: Sika MonoTop 610 primer was applied, one single coat to concrete and two coats to exposed reinforcement. This was followed by Sika Monotop 615 repair mortar, applied by hand whilst the bonding primer was still wet (wet on wet). Where layers needed to be built up to prevent sagging or slumping, each layer was allowed to stiffen before the subsequent layer was applied. If more than 24 hours elapsed between layers then an additional coat of Sika Monotop 610 was applied.

The cathodic protection: This comprised of the installation of XP2 galvanic anodes within the repair areas, supported by CC 100 galvanic anodes installed into drilled holes elsewhere on the pier.

The fairing coat: Once the concrete repairs and cathodic protection works had been completed, the crosshead and piers were over-coated with Renderoc FC. Prior to trowelling on the Renderoc FC, the concrete surface was pressure washed to remove any dust and unsound material. This cleaning operation could only be carried out during rail possessions.

Access to the beams in the High Street environment was via a partially encapsulated scaffold and Haki stairway. Track-side, Freyssinet provided all necessary temporary scaffolding to carry out repairs during night time possessions and ensured their complete removal at the end of every shift.

Summing up the works, Councillor Pat Merrick said: "The repairs will ensure that the bridge will continue as a main gateway to Ellesmere Port for many years to come."

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